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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,606	09/05/2003	Bruno Devos	BOCK-06/119	8003

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EXAMINER
MOON, SEOKYUN

ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/656,606	DEVOS ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The applicants' arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1**, **2**, **5**, **8-11**, and **13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan (US 6,486,607) and Sakamoto (US 5,594,463), and further in view of Rader et al. (US 2004/0233144, herein after "Rader").

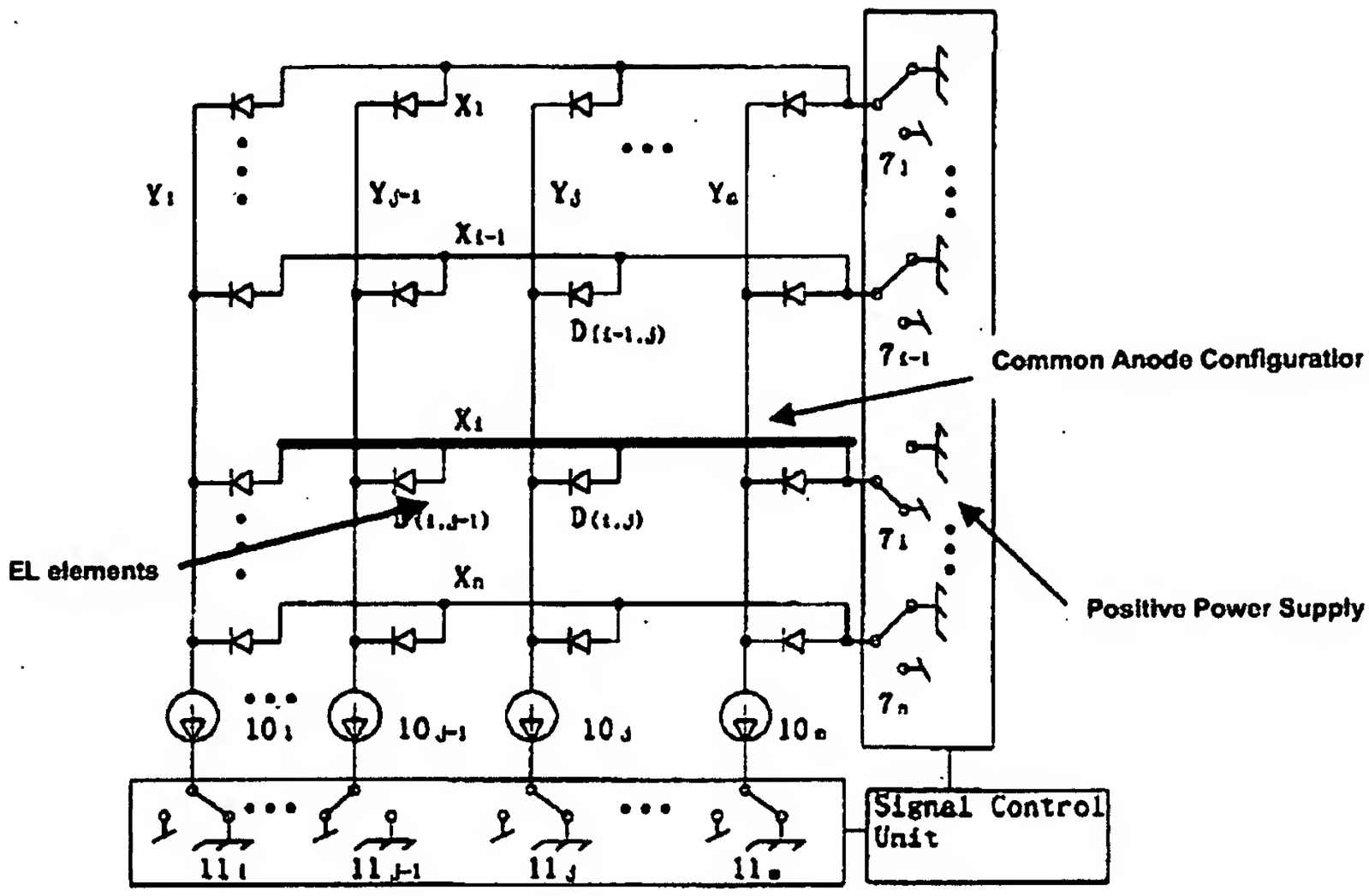
As to **claim 1**, Yeuan [figs. 7 and 10] teaches a method for controlling an electroluminescent display [abstract lines 1-3], the display comprising [drawing 1 provided on page 3 of this office action, which is equivalent to fig. 10 of Yeuan]:

a plurality of EL elements having an anode and a cathode;

the EL elements being arranged in a common anode configuration;

whereby a current source is arranged between each individual cathode of the EL elements and ground;

the anodes of the EL elements are electrically connected in common to a positive power supply



Drawing 1

Yeuan does not teach the method to comprise a power voltage supply compensation.

However, Sakamoto teaches a method of controlling an electroluminescent display apparatus, comprising a power voltage supply compensation in which a voltage drop is measured across an EL element and wherein the measured voltage drop is used as an indicator for the light output of the EL elements and wherein a power supply is adjusted in function of the measured voltage drop [col. 2 lines 18-33.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a voltage detecting device in the display of Yeuan and to modify the display of Yeuan to change the power voltage depending on the detected voltage drop across the EL elements, as taught by Sakamoto, in order to allow the display of Yeuan to obtain an appropriate lighting condition of the EL elements, even after the display device is used for a long time, thus to optimize the display function of the display [col. 1 lines 56-59].

Yeuan as modified by Sakamoto does not teach the method comprising measuring a voltage drop across the current sources to measure a voltage drop across each EL element.

However, Rader [fig. 2] teaches an idea of measuring a voltage drop across a current source to measure a voltage drop across each of all EL elements [abstract and par. (0019) lines 11-16].

It would have been obvious to one of ordinary skill in the art at the time of the invention to adopt the idea of Rader of measuring a voltage drop across a current source to measure a voltage drop across each of all EL elements, in the display of Yeuan as modified by Sakamoto, in order to allow the display to examine the status of each of all El elements, and thus to optimize the power compensation function.

Yeuan as modified by Sakamoto and Rader does not expressly disclose the EL elements being organic light-emitting diodes.

However, examiner takes official notice that it is well known in the art to use organic light-emitting diodes as light-emitting elements in a display apparatus.

It would have been obvious to one of ordinary skill in the art at the time of the invention to specify the display of Yeuan as modified by Sakamoto and Rader to include organic light-emitting diodes as EL elements for the display since organic light-emitting diodes are well known for low manufacturing cost.

As to **claim 2**, Yeuan as modified above teaches the power supply being adjusted.

Yeuan as modified above does not teach the power supply to be adjusted such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage.

However, Sakamoto further teaches a method of adjusting a power supply such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage [Sakamoto: abstract lines 9-15].

It would have been obvious to one of ordinary skill in the art at the time of the invention to specify the method of adjusting the power supply of Yeuan as modified above such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage, in order to maintain luminance of each organic light emitting diode required for displaying images, and thus to prevent any image degradation.

As to **claim 5**, Yeuan as modified by Sakamoto [Sakamoto: fig. 5] and Rader teaches the method characterized in that the voltage drop is measured via analog-to-digital converters ("A/D converter 72") [Sakamoto: col. 7 lines 7-20].

As to **claim 8**, Yeuan as modified by Sakamoto and Rader [Rader: fig. 2] teaches the method characterized in that the organic light-emitting diodes of the display are divided in groups, each group having its own power supply regulation, whereby the above the measurement is carried out per group and the worst case value of the measurement is used for controlling the power supply of the group [Rader: par. (0019) lines 11-16 and par. (0023) lines 7-14].

As to **claims 9** and **10**, Yeuan as modified by Sakamoto and Rader teaches a display tile or a module having power compensation function.

Yeuan as modified by Sakamoto and Rader does not expressly teach the method characterized in that it is used in a large-screen application, the screen being composed of a plurality of display tiles, whereby the control is applied at least individually for each of the tiles and each of the tiles is composed of a plurality of modules and in that the control is applied individually for each of the modules.

However, the courts have held that a mere duplication of the components of the device is generally recognized as being within the level of ordinary skill in the art. *St Regis Paper Co. v. Bemis Co. Inc. 193 USPQ 8, 11 (7 TM Cir. 1977).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to duplicate the display apparatus of the display of Yeuan as modified by Sakamoto and Rader, in order to provide a wide display screen while preventing the image degradation caused by long-time use of the display.

As to **claim 11**, Yeuan as modified by Sakamoto and Rader teaches the method characterized in that a limit control is applied, whereby when a present value of maximum power of the display ("*maximum value able to be set*") or for a module dissipation is obtained for a portion in particular for a tile, the method of controlling is interrupted [Sakamoto: col. 7 lines 51-61].

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claims 1 and 5 except for a variable power supply including a voltage regulator being operable to adjust the power supply as a function of the measured voltage drop.

Yeuan as modified by Sakamoto and Rader teaches a variable power supply including a voltage regulator (Sakamoto: means for preventing the driving voltage "Vd" to be set to a value greater than the operable maximum voltage value, as disclosed in col. 7 lines 51-61) being operable to adjust the power supply as a function of the measured voltage drop [Sakamoto: col. 2 lines 18-34].

4. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan, Sakamoto, and Rader as applied to claims 1, 2, 5, 8-11 and 13 above, and further in view of Kondakov et al. (US 2004/0135749, herein after "Kondakov").

Yeuan as modified by Sakamoto and Rader teaches the method comprising power compensation.

Yeuan as modified by Sakamoto and Rader does not teach the power compensation to be performed periodically.

However, Kondakov [par. (0009) and par. (0037) lines 1-3] teaches a method of adjusting the voltage applied across pixels of an OLED display periodically, for compensation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display of Yeuan as modified by Sakamoto and Rader to perform the power compensation periodically, as taught by Kondakov, in order to compensate degradation of the luminance of the organic light-emitting diodes continuously and periodically, thus to prevent the degradation on the image display during overall display driving period.

5. **Claims 4**, **6**, and **7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan, Sakamoto, and Rader as applied to claims 1, 2, 5, 8-11, and 13 above, and further in view of Ishizuki et al. (US 2003/0122813, herein after "Ishizuki").

As to **claim 4**, Yeuan as modified by Sakamoto and Rader teaches a method of measuring the voltage drop.

Yeuan as modified by Sakamoto and Rader does not expressly teach the method characterized in activating the organic light-emitting diodes in a predetermined sequence in order to measure the voltage drop.

However, Ishizuki [claim 1, 3rd paragraph "a current measuring part for.., to each pixel;"] teaches the method characterized in activating EL elements in a predetermined sequence ("*said emitting elements to independently emit light in succession*") in order perform the power compensation ("*drive voltage is adjusted*") [abstract. lines 3-13].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display of Yeuan as modified by Sakamoto and Rader to activate the organic light-emitting diodes in a predetermined sequence for power compensation rather than to activate the diodes randomly, as taught by Ishizuki in order to simplify the operational procedure for power compensation, thus to simplify the driving circuit structure.

As to **claim 6**, Yeuan as modified by Sakamoto and Rader does not teach the method characterized in that at least a number of the measured values of voltage or voltage drop are stored in a storage device for interrogation.

However, Ishizuki [claim 21] teaches a method characterized in measuring a current value by fetching the value of current flowing in power line while causing emitting elements to emit light in succession and storing the measured current values in a memory.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display of Yeuan as modified by Sakamoto and Rader to measure the factor (such as "*the voltage drop across the current source*" for Sakamoto and "*the current flowing in power line*" for Ishizuki) causing irregular luminance of display apparatus after long-time use and to store the factor in a memory, as taught by Ishizuki, to obtain a broaden database for compensation, and thus to provide optimum power compensation to the display apparatus.

As to **claim 7**, Yeuan as modified by Sakamoto and Rader [Rader: fig. 2] teaches the method characterized in that one or more of the current sources each co-operate with a plurality of the organic light-emitting diodes, whereby the voltage drop across such current source is measured for each of the diodes coupled to the corresponding current source [Rader: par. (0019) lines 11-16].

Yeuan as modified by Sakamoto and Rader does not teach the method of measuring the voltage drop across the current source for each of the diodes by sequentially actuating diodes.

However, Ishizuki [claim 2: 3rd par ("*a current measuring part for .... each assigned to each pixel; and*") teaches the method of measuring current values by sequentially actuating diodes (by fetching the values of currents flowing in power line while causing emitting elements to emit light in succession).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to actuate the diodes of the display of Yeuan as modified by Sakamoto and Rader sequentially, in order to measure the factor (such as "*the voltage drop across the current source*" for Sakamoto and "*the current flowing in power line*" for Ishizuki) causing irregular luminance of display apparatus after long-time use, for all the organic light-emitting diodes of the modified display, in an organized and simplified way.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

03/21/2007

- s.m.

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER